

WHAT IS CLAIMED IS:

1. A method for depositing a tungsten silicide film, wherein when a tungsten silicide layer is formed on a polysilicon layer, a phosphorus atom containing gas is added to a reactive gas at least in the initial stage that said tungsten silicide layer is formed, and the amount of the added phosphorus atom containing gas is set to be in the range of from 0.2 vol.% to 0.45 vol.%.
2. A method for depositing a tungsten silicide film, wherein when a tungsten silicide layer is formed on a polysilicon layer, a phosphorus atom containing gas is added to a reactive gas at least in the initial stage that said tungsten silicide layer is formed, and a tungsten silicide layer forming temperature is set to be a temperature at which silicon atoms of said polysilicon layer are activated.
3. A method for depositing a tungsten silicide film as set forth in claim 2, wherein said tungsten silicide layer forming temperature is set to be at least 700 °C.
4. A method for depositing a tungsten silicide film as set forth in claim 1 or 2, which includes a first stage in which said phosphorus atom containing gas is added to said reactive gas, and a second stage in which said phosphorus atom containing gas is not added to said reactive gas.
5. A method for depositing a tungsten silicide film as set forth in claim 1 or 2, wherein said reactive gas is a mixed gas of tungsten hexafluoride (WF_6), dichlorosilane ($SiCl_2H_2$) and argon (Ar).
6. A method for depositing a tungsten silicide film as set forth in claim 1, wherein a growth nucleus of tungsten silicide is formed on the surface of said polysilicon layer.
7. A method for depositing a tungsten silicide film as set forth in claim 2, wherein lattice defects, which may be produced,

are filled with silicon atoms of said polysilicon layer or said tungsten silicide layer.

8. A method for preparing a gate electrode/wiring, which comprises:

a step of depositing a tungsten silicide layer on a polysilicon layer,

a step of depositing a silicon layer on said tungsten silicide layer; and

a side wall oxidizing step of forming a silicon oxide film on a side wall of a gate electrode/wiring layer including said polysilicon layer and said tungsten silicide layer.

9. A method for preparing a gate electrode/wiring as set forth in claim 8, wherein said silicon layer serves as a source for supplying silicon atoms to said silicon oxide film at said side wall oxidizing step.

10. A method for preparing a gate electrode/wiring as set forth in claim 8, wherein at said step of depositing the tungsten silicide layer on the polysilicon layer, a phosphorus atom containing gas is added to a reactive gas at least in the initial stage that said tungsten silicide layer is formed, and the amount of the added phosphorus atom containing gas is set to be in the range of 0.2 vol.% to 0.45 vol.%.

11. A method for preparing a gate electrode/wiring as set forth in claim 8, wherein at said step of depositing the tungsten silicide layer on the polysilicon layer, a phosphorus atom containing gas is added to a reactive gas at least in the initial stage that said tungsten silicide layer is formed, and a tungsten silicide layer forming temperature is set to be a temperature at which silicon atoms of said polysilicon layer are activated.

12. A method for preparing a gate electrode/wiring, which comprises:

a step of depositing a tungsten silicide layer on a

polysilicon layer;

a side wall oxidizing step of oxidizing a side wall of a gate electrode/wiring layer containing said polysilicon layer and said tungsten silicide layer; and

a short-time annealing step carried out between said depositing and oxidizing steps.

13. A method for preparing a gate electrode/wiring as set forth in claim 12, wherein at said step of depositing the tungsten silicide layer on the polysilicon layer, a phosphorus atom containing gas is added to a reactive gas at least in the initial stage that said tungsten silicide layer is formed, and the amount of the added phosphorus atom containing gas is set to be in the range of 0.2 vol.% to 0.45 vol.%.

14. A method for preparing a gate electrode/wiring as set forth in claim 12, wherein at said step of depositing the tungsten silicide layer on the polysilicon layer, a phosphorus atom containing gas is added to a reactive gas at least in the initial stage that said tungsten silicide layer is formed, and a tungsten silicide layer forming temperature is set to be a temperature at which silicon atoms of said polysilicon layer are activated.

15. A gate electrode/wiring structure comprising: a polysilicon layer; a tungsten silicide layer formed on said polysilicon layer; and a silicon layer formed on said tungsten silicide layer.

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